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MEASUREMENT AND EVALUATION OF ROADSIDE NOISE GENERATED BY TRANSIT BUSES

Final Report
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16. Abstract
Traffic noise is a serious concern in urbanized areas in the United States and around the world. With the ever-increasing vehicle population, exterior vehicle noise is a growing problem that needs more extensive study by scientists and engineers. To develop more effective strategies for reduction of traffic noise levels, it is necessary to identify and characterize all sources contributing to the noise. The main objective of this study was to determine the levels of roadside noise generated by buses under various road surface and vehicle speed conditions typical for transit bus operations in urbanized areas.

After collecting and analyzing near- and far-field data for both a heavy truck and a transit bus at speeds of 10, 20, 30, and 40 mph over three pavement types, the following conclusions can be made. For the three types of pavement tested (chip seal, seal coat, and PCC), there is not a great deal of difference in tire noise generation. None of the three types of pavement tested seems to have an effect on the noise propagating to the far field. For the heavy truck the dominant contributor of far-field noise is tire-pavement contact, especially at higher speeds. For the transit bus the dominant contributor of far-field noise is the CNG engine. The far-field noise generated by the transit bus is significantly greater than that generated by the heavy truck. Transit buses could be quieted significantly by designing the engine compartment to absorb or redirect more of the acoustic energy generated by the engine.

17. Key Words
transit bus, noise, roadside noise, far-field

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